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CALIFORNIA DESERT AIR WORKING GROUP

DATA BASE STUDY

VOLUME 2 OF 7

DATA FORMAT SELECTION

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CALIFORNIA DESERT AIR WORKING GROUP (CDAWG) DATA BASE STUDY: DATA FORMAT SELECTION

1.0 RATIONALE FOR CHOICE OF FORMAT

In this data base compilation data from multiple sources were obtained. Since the data obtained are in different formats, it behooves that the data base be compiled in a common format which is also easily accessed by the end users of the data base. In this program, we are dealing with four different types of data: air quality, emissions, visibility, and meteorological. Thus, our approach is to select a common format for each type of data.

2.0 AIR QUALITY DATA

The common format for the air quality data selected for the data base will be the data format used by the California Air Resources Board (CARB) to report data. This format was selected from among others for the following reasons:

The overwhelming majority of the sites in the California desert for which data were obtained were CARB sites. Thus, choosing the CARB format results in the least effort for data conversion.

CARB data format is widely used and , hence, will not pose any problem for the end users of the data base. Other private agency data formats lack such widespread familiarity. Although SAROAD data format would have been another logical choice, it was not selected because all SAROAD sites were also CARB sites and the total number of SAROAD sites in the California desert was a small fraction of the number of CARB sites. (A few other agencies did report data in the SAROAD format, but the number of sites involved was small.)

It should be noted that after the data have been compiled, suggestions for improving or streamlining the standard format will be recommended.

2.1 Format Description

The CARB data format is adapted from the AQHS-II master record format. CARB uses two types of data format, one for hourly averages and the other for daily averages. Each record of the hourly data represents one day whereas a month's daily data will be included in one record. Averages of continuous measurements such as the criteria pollutants will be included in the hourly data format. Daily data represent data typically collected over a 24 hour period; Hi-Vol measurements fall in this category (although Hi-Vol measuremnts are usually made every 6th day, the period of measurement is 24 hours). The details of the format are in Appendix A.

2.2 Conversion Software

Software is being written for converting non CARB data to CARB format. Complete listings and tape copy of all software will be included with the final data base. Currently only preliminary versions of conversion software for hourly data are available.

3.0 EMISSIONS DATA

The emission inventory that we have obtained is the 1979 inventory from CARB. Thus, the emission inventory is used in the same CARB format given in Appendix B. After the data have been compiled, suggestions for improving or streamlining the standard format will be recommended.

4.0 VISIBILITY DATA

Visibility data are either continuous nephelometer measurements or either instrumental or visual measurements of real targets. Nephelometer data will be included in the air quality data. Instrumental or manual target measurements are usually made on each of several targets at each site at specific times each day, typically thrice a day, and such data cannot be

fitted into either the daily or hourly air quality data formats. Most of this type of target measurement data have been obtained from the National Park Service, and, hence, their data format will be used for all visibility data. After the data have been compiled, suggestions for improving or streamlining the standard format will be recommended. The details of the format are in Appendix C.

5.0 METEOROLOGICAL DATA

Our main source of meteorological data on tape is the National Weather Service. These will be used as is since the data format is widely known. After the data have been compiled, suggestions for improving or streamlining the standard format will be recommended. Meteorological data collected and reported along with air quality data will be included in the appropriate air quality data files.

Appendix A

AIR QUALITY DATA FORMAT*

FIELD NAME	RECORD COLUMN	FORMAT LENGTH	FIELD TYPE AND ACCEPTABLE CODE OR RANGE OF VALUES
1. State Code	01-02	I2	Numeric; 05 - California 03 - Arizona 28 - Nevada
2. Site Number			
a) County Code	03-04	I2	Numeric; 02 - Alpine County 13 - Imperial County 14 - Inyo County 15 - Kern County 26 - Mono County 33 - Riverside County 36 - San Bernardino County 70 - Los Angeles County 99 - Non California
b) Site Code	05-09	I5	Unique numerical code
3. Agency	10	A1	Alphanumeric; identifies the type of agency submitting the data. A - ARB F - Federal Govt. Agencies I - Local APCD J - Private K - University L - Military N - Non ARB State Agency

FIELD NAME	RECORD COLUMN	FORMAT LENGTH	FIELD TYPE AND ACCEPTABLE CODE OR RANGE OF VALUES
4. Project	11-12	I2	Numeric; identified the type of project in which data is collected. 11 - Air Monitoring 22 - Special Project or Research; generally includes all private monitoring 31 - QA or parallel monitoring
5. Interval	13	I1	1 - hourly; 2 = alternate hours 3 - every 3 hours, 8 - 24 hours.
6. Date			Numeric.
a) Year	14-15	I2	
b) Month	16-17	I2	
c) Day	18-19	I2	
7. Start Hour	20-21	I2	Numeric; value = '00'' non 00 meaningless except for TSP for which it is actual start.
8. Pollutant Code	22-26	I5	Numeric; identifies pollutant (parameter) sampled. Complete list included with this document.
9. Method Code	27-28	I2	Numeric; identifies the method of collection and/or method of analysis for a specific pollutant. A complete list included with this document.
10. Units Code	29-30	I2	Numeric; identifies the units in which data values are expressed A complete list included with this document.

FIELD NAME	RECORD COLUMN	FORMAT LENGTH	FIELD TYPE AND ACCEPTABLE CODE OR RANGE OF VALUES
11. Decimal Code	31	I1	Numeric; indicates how many positions from the right the implied decimal point should be. Values = '0', '1', '2', '3', '4'.
12. Number of Observations	32-33	I2	Numeric; indicates the number of observation fields contained in the record. Always 24 for hourly data and 31 for daily data.
13. Data Field			Numeric; 0000-upper limit. '9999' indicates no data values.
	34-129	24I4	Hourly data
	34-157	31I4	Daily data

* This format description is a modification of the CARB master record format. Mainly, the modification was to reduce the record size.

Appendix B

EMISSION DATA FORMAT

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
YEAR	I4	4	INVENTORY YEAR
COUNTY	I2	2	EDS COUNTRY NUMBER
COUNTYID	A3	3	ALPHA COUNTY ID, TABLE II, EDTAD*
COUNTY NAME	A15	15	COUNTY NAME
FACILITYID	I9	9	FACILITY ID
AIRBASIN	A3	3	AIR BASIN, TABLE V, APPI, EDTAD
SOURCE	A1	1	TYPE OF DATA-POINT(P) AREA(A)
FACSIPCODE	I9	9	ZIP CODE OF FACILITY
MAILZIPCODE	I9	9	MAILING ZIP CODE
CITYCODE	I4	4	CITY CODE, TABLE IV, APPI, EDTAD
AREA CODE	I3	3	AREA CODE
PHONENUMBER	I7	7	PHONE NUMBER
UTMEAST	F9.3	9	UTM EAST IN KILOMETERS
UTMNORTH	F9.3	9	UTM NORTH IN KILOMETERS
FACILITYNAME	A30	30	FACILITY NAME
CITY	A20	20	CITY NAME
ATTENTION	A30	30	PERSON RESPONSIBLE FOR MAIL
STREET	A30	30	STREET NUMBER AND NAME
EISNAMEADDR	A43	43	EIS PLANE NAME AND ADDRESS
OWNERTYPE	A1	1	TYPE OF ORGANIZATION OWNING FA P - PRIVATE OWNERSHIP L - LOCAL GOVT. S - STATE GOVT. F - FEDERAL GOVT. U - UTILITY
CONTACT	A30	30	PERSON TO CONTACT
DISTRICT	A3	3	RESPONSIBLE DISTRICT
FACILCHECK	A1	1	ALWAYS 'Y'
DEVICEID	I5	5	DEVICE ID

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
STACKID	I5	5	STACK ID
OPCYCLE	I2	2	OPERATING CYCLE ID, TABLE XVII, XVIII, APPI, EDTAD
HOURSPERDAY	I2	2	AVERAGE OPERATING HOURS PER DAY
DAYPERWEEK	I1	1	AVERAGE OPERATING DAYS PER WEEK
WEEKSPERYR	I2	2	OPERATING WEEKS PER YEAR
DEVCONTROL1	I5	5	CONTROL CLOSEST TO SOURCE
DEVCONTROL2	I5	5	CONTROL SECOND FROM SOURCE
DEVCONTROL3	I5	5	CONTROL THIRD FROM SOURCE
DEVCONTROL4	I5	5	CONTROL FOURTH FROM SOURCE
DEVCONTROL5	I5	5	CONTROL FIFTH FROM SOURCE DEV CONTROL CODES FOR UP TO 5 CONTROL DEVICES FROM TABLE VIII, APPENDIX I, CARB EMISSION DATA TURN AROUND DOCUMENT.* OVER 50 3-NUMBER CODES LISTED.
COMPLISCHED	I6	6	DATE DEV MUST BE COMPLIANT (YM)
COMPLIDATE	I6	6	DATE OF LAST CHANGE (YRMODA)
SPACEHEAT	F4.2	4	% OF FUEL USED FOR SPACE HEAT
BOILERCAPAC	F8.0	8	BOILER CAPACITY IN M BTU
CONFIDENTIAL	A1	1	PROCRATE CONFIDENTIAL? Y OR N
PERMITID	A12	12	LOCAL PERMIT INFO
COMPLISTATUS	A1	1	
CONTROLREG1	A8	8	LOCAL CONTROL REGULATION 1
CONTROLREG2	A8	8	LOCAL CONTROL REGULATION 2
CONTROLREG3	A8	8	LOCAL CONTROL REGULATION 3
LOCALDEVNAME	A16	16	LOCAL NAME FOR THIS DEVICE

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
JANTHRUPUT	F5.3	5	FRACTION THRUPUT FOR JANUARY
FEBTHRUPUT	F5.3	5	FRACTION THRUPUT FOR FEBRUARY
MARTHRUPUT	F5.3	5	FRACTION THRUPUT FOR MARCH
APRTHRUPUT	F5.3	5	FRACTION THRUPUT FOR APRIL
MAYTHRUPUT	F5.3	5	FRACTION THRUPUT FOR MAY
JUNTHRUPUT	F5.3	5	FRACTION THRUPUT FOR JUNE
JULTHRUPUT	F5.3	5	FRACTION THRUPUT FOR JULY
AUGTHRUPUT	F5.3	5	FRACTION THRUPUT FOR AUGUST
SEPTHRUPUT	F5.3	5	FRACTION THRUPUT FOR SEPTEMBER
OCTTHRUPUT	F5.3	5	FRACTION THRUPUT FOR OCTOBER
NOVTHRUPUT	F5.3	5	FRACTION THRUPUT FOR NOVEMBER
DECTHRUPUT	F5.3	5	FRACTION THRUPUT FOR DECEMBER
STKUTMEAST	F9.3	9	UTM EAST FOR STACK IN KM
STKUTMNORTH	F9.3	9	UTM NORTH FOR STACK IN KM
STACKHEIGHT	F8.0	8	STACK HEIGHT (FEET)
STACKDIAM	F8.1	8	STACK DIAMETER (FEET)
GASVELOCITY	F8.0	8	GAS VELOCITY (FT/MIN)
GASTEMP	F8.0	8	GAS TEMPERATURE (DEG F)
GASFLOWRATE	F8.0	8	GAS FLOWRATE (FT3/MIN)
CES	I5	5	CATEGORY OF EMISSIONS, REFER EMISSION DATA TURN AROUND DOCUMENT, P 26
SIC	I4	4	SIC CODE, REFER STANDARD INDUSTRIAL CLASSIFICATION CODE, SUPT. OF DOCUMENTS, WASH., D.C., APPENDIX II.
SCC	I8	8	SCC CODE, REFER AE MANUAL, VOL 5, EPA 450/2-76-005-2)

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
PRX	F10	10	PROCESS RATE IN SCC UNITS. EACH CES HAS A SPECIFIED SET OF UNITS; REFER EMISSION DATA TURN AROUND DOCUMENT, APPENDIX II.
NOFX	F6.4	6	OPERATING RATE AS % OF MAX
MAXDX	F10.3	10	MAXIMUM DESIGN PROCESS RATE, CES UNITS
SX	F6.4	6	FUEL SULFUR CONTENT-FRACTION
ASHX	F6.4	6	FUEL ASH CONTENT-FRACTION
HEATX	F6.0	6	FUEL HEAT CONTENT IN M BTU
PRDESCX	A25	25	PROCESS DESCRIPTION
POLLUTANT	I5	5	SAROAD POLLUTANT CODE
EMFACTX	F9.3	9	EMISSION FACTOR
UEMFACTX	F10.3	10	UNCONTROLLED EMISSION FACTOR. THE AVERAGE RATE AT WHICH A POLLUTANT WOULD BE EMITTED AS A RESULT OF SOURCE ACTIVITY IF NO CONTROL EQUIPMENT WAS USED. UNITS ARE POUNDS PER CES UNITS.
ALLOWABLEEMS	F9.1	9	ALLOWABLE EMISSIONS IN TONS/YR
EMISSIONS	F9.1	9	ANNUAL EMISSIONS IN TONS/YR
METHX	A1	1	METHOD USED TO COMPUTE EMISSION 0 - KNOWN ZERO EMISSIONS 1 - BASED ON SOURCE TESTING 2 - BASED ON MATERIAL BALANCE 3 - CALCULATED USING STD EPA FACTORS 4 - BEST ESTIMATE 5 - FACTOR DIFFERENT THAN EPA 6 - UNDER CONSTRUCTION 7 - SHUTDOWN

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
ACTIVITY	I3	3	ACTIVITY CODE - TABLE X, APP.I, EMISSION DATA TURN AROUND DOCUMENT
PROCESS	I3	3	PROCESS CODE - TABLE XI, APP.I, EMISSION DATA TURN AROUND DOCUMENT
EANDM	I3	3	ENTRAIN. AND MAT. CODE - TABLE XII, APP.I, EMISSION DATA TURN AROUND DOCUMENT
DIMENSION	A36	36	DIMENSION CODES - TABLE XIII, APP.I, EMISSION DATA TURN AROUND DOCUMENT
GROWTH	I3	3	GROWTH CODE, INTERNAL FOR ARB USE
CONTROL	I3	3	CONTROL CODE, INTERNAL FOR ARB USE
TSPCODE	I3	3	
VOCCODE	I3	3	
ACTIVITYNAME	A30	30	ACTIVITY NAME
PROCESSNAME	A30	30	PROCESS NAME
EANDMNAME	A30	30	ENTRAINMENT NAME
GROWTHNAME	A30	30	GROWTH NAME
CONTROLNAME	A30	30	CONTROL NAME
DIMNAME	A130	130	DIMENSION NAME
AREAFLAG	A1	1	
AREADAILYOP	I1	2	AREA SOURCE DAILY OPCYCLE
AREAWEEKLYOP	I2	2	AREA SOURCE WEEKLY OPCYCLE
AREAANNJALOP	I2	2	AREA SOURCE ANNUAL OPCYCLE
POLLUTNAME	A4	4	POLLUTANT NAME
SCCNAME	A20	20	SHORT SCC NAME
FRACTIONRHC	F6.4	6	FRACTION OF RHC
SCC3NAME	A20	20	NAME OF FIRST 3 DIGETS
SCC6NAME	A20	20	NAME OF FIRST 6 DIGETS OF SCC
SCC8NAME	A20	20	NAME OF ALL 8 SCC DIGETS
COEMFACT	F6.2	6	CO EMFACT IN LBS PER UNIT
NOXEMFACT	F6.2	6	NOX EMFACT IN LBS PER UNIT

FIELD NAME	FORMAT	LENGTH	CODES OR VALUES
SOXEMFACT	F6.2	6	SOX EMFACT IN LBS PER UNIT
TOGEMFACT	F6.2	6	TOG EMFACT IN LBS PER UNIT
TSPEMFACT	F6.2	6	TSP EMFACT IN LBS PER UNIT
SCCUNITS	A25	25	SCC UNITS
SICNAME	A30	30	SHORT SIC NAME
SIC2NAME	A30	30	NAME OF FIRST TWO DIGITS
SIC3NAME	A30	30	NAME OF FIRST 3 DIGETS OF SIC
SIC4NAME	A30	30	NAME OF ALL FOUR SIC DIGETS
*** SLACK	X1	1	
TOTAL		1235	

Appendix C

VISIBILITY DATA FORMAT

(Data Stored in 6 Records)

FIELD NAME	FORMAT	RECORD COLUMN	TYPICAL CODE OR VALUES
RECORD 1			
Year	I2	1-2	
Month	I2	3-4	
Location	I2	5-6	23 - Death Valley - Joshua Tree
Day	I2	7-8	
Line #	I1	9	Counter for 6 records; always 1 for record 1
Met Codes:			
Target 1, 0900 hrs LST	I1	10	0 - Total sky cloudless
Target 1, 1200 hrs LST	I1	11	1 - No clouds in sun-target-observer plane
Target 1, 1500 hrs LST	I1	12	
Target 2, 0900 hrs LST	I1	13	2 - Less than 1/3 cloud cover, total sky
Target 2, 1200 hrs LST	I1	14	
Target 2, 1500 hrs LST	I1	15	3 - 1/3 to 2/3 cloud cover, total sky
Target 3, 0900 hrs LST	I1	16	
Target 3, 1200 hrs LST	I1	17	4 - 2/3 to total cloud cover
Target 3, 1500 hrs LST	I1	18	5 - Overcast
Target 4, 0900 hrs LST	I1	19	6 - Raining on site
Target 4, 1200 hrs LST	I1	20	7 - Readings not taken - unrelated to atmospheric conditions
Target 4, 1500 hrs LST	I1	21	
Target 5, 0900 hrs LST	I1	22	
Target 5, 1200 hrs LST	I1	23	8 - Sun in lens, readings not taken
Target 5, 1500 hrs LST	I1	24	
Snow Codes:			
Target 1, 0900 hrs LST	I1	26	1 - Target in sun, cloud behind target, snow on target
Target 1, 1200 hrs LST	I1	27	
Target 1, 1500 hrs LST	I1	28	

FIELD NAME	FORMAT	RECORD COLUMN	TYPICAL CODE OR VALUES
Target 2, 0900 hrs LST	I1	29	2 - Target in sun, cloud behind target
Target 2, 1200 hrs LST	I1	30	
Target 2, 1500 hrs LST	I1	31	3 - Target in sun, snow on target
Target 3, 0900 hrs LST	I1	32	
Target 3, 1200 hrs LST	I1	33	4 - Target in sun
Target 3, 1500 hrs LST	I1	34	5 - Cloud behind target, snow on target
Target 4, 0900 hrs LST	I1	35	
Target 4, 1200 hrs LST	I1	36	6 - Cloud behind target
Target 4, 1500 hrs LST	I1	37	7 - Snow on target
Target 5, 0900 hrs LST	I1	38	8 - Target not in sun, no cloud behind target, snow on target
Target 5, 1200 hrs LST	I1	39	
Target 5, 1500 hrs LST	I1	40	
			9 - target obscured by clouds
RECORDS 2-6			
Year	I2	1-2	
Month	I2	3-4	
Location	I2	5-6	28 - Death Valley Joshua Tree
Day	I2	7-8	
Line #	I1	9	
UV Contrast Ratios			
- 0900 LST	I3	11-13	The following codes are used for invalid data:
- 1200 LST	I3	14-16	
- 1500 LST	I3	17-19	-6 - No data, raining, sun in radiomter, or or target obscured by clouds
Repeated for Blue, Green, Red Contrast Ratios			
			-1 - Target obscured by haze
			-3 - Contrast Raleigh Minimum of 1-01
			-4 - Ratio is 0.99, 1.0 or 1.01, misaligned data
			-5 - Ratio significantly different from ratios at other wavelengths

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